

CLEAN CLAIMS OZ 51416

1. A catalyst for heterogeneously catalyzed reactions, which comprises active components and a catalyst support comprising amounts of  $\delta\text{-Al}_2\text{O}_3$  which can be detected by X-ray diffractometry.
2. A catalyst for heterogeneously catalyzed reactions as claimed in claim 1, wherein the catalyst support comprises from 10 to 100% by weight of  $\delta\text{-Al}_2\text{O}_3$ .
3. A catalyst for heterogeneously catalyzed reactions as claimed in claim 1, wherein the active components employed are from 1 to 15% by weight of copper, from 0.1 to 6% by weight of alkali metals, from 0 to 5% by weight of alkaline earth metals, rare-earth metals or mixtures thereof.
4. A catalyst for heterogeneously catalyzed reactions as claimed in claim 1, prepared by impregnating a shaped  $\delta\text{-Al}_2\text{O}_3$ -containing support having a BET surface area of from 80 to 250 g/m<sup>2</sup> with salts of copper, alkali metals and, if desired, alkaline earth metals, rare-earth metals or mixtures thereof.
5. A process for the preparation of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1, which comprises impregnating the  $\delta\text{-Al}_2\text{O}_3$ -containing support with salts of copper, alkali metals and, if desired, alkaline earth metals, rare-earth metals or mixtures thereof, separately from one another or together, if

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desired with the addition of acids or oxidants.

6. A process for the preparation of a catalyst for heterogeneously catalyzed reactions as claimed in claim 5, wherein the salts employed are chlorides.
7. The use of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1 for exothermic gas-phase reactions.
8. The use of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1 for oxychlorination reactions.
9. The use of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1 for the oxychlorination of ethylene to 1,2-dichloroethane.
10. A process for the preparation of 1,2-dichloroethane, which comprises reacting ethylene with hydrogen chloride and air or oxygen in the presence of a catalyst as claimed in claim 1 at a temperature of from 150 to 400°C and a pressure of from 1 to 10 bar.
11. The use of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1 for partial oxidation reactions.

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3. A catalyst for heterogeneously catalyzed reactions as claimed in claim 1 [either of claims 1 and 2], wherein the active components employed are from 1 to 15% by weight of copper, from 0.1 to 6% by weight of alkali metals, from 0 to 5% by weight of alkaline earth metals, rare-earth metals or mixtures thereof.

5. A process for the preparation of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1 [one of claims 1 to 3], which comprises impregnating the  $\delta$ - $\text{Al}_2\text{O}_3$ -containing support with salts of copper, alkali metals and, if desired, alkaline earth metals, rare-earth metals or mixtures thereof, separately from one another or together, if desired with the addition of acids or oxidants.

7. The use of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1 [one of claims 1 to 4] for exothermic gas-phase reactions.

8. The use of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1 [one of claims 1 to 4] for oxychlorination reactions.

9. The use of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1 [one of claims 1 to 4] for the oxychlorination of ethylene to 1,2-dichloroethane.

10. A process for the preparation of 1,2-dichloroethane, which comprises reacting ethylene with hydrogen chloride and air or oxygen in the presence of a catalyst as claimed in claim 1 [one of claims 1 to 4] at a temperature of from 150 to 400°C and a pressure of from 1 to 10 bar.

11. The use of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1 [one of claims 1 to 4] for partial oxidation reactions.

REFERENCE - 3524260